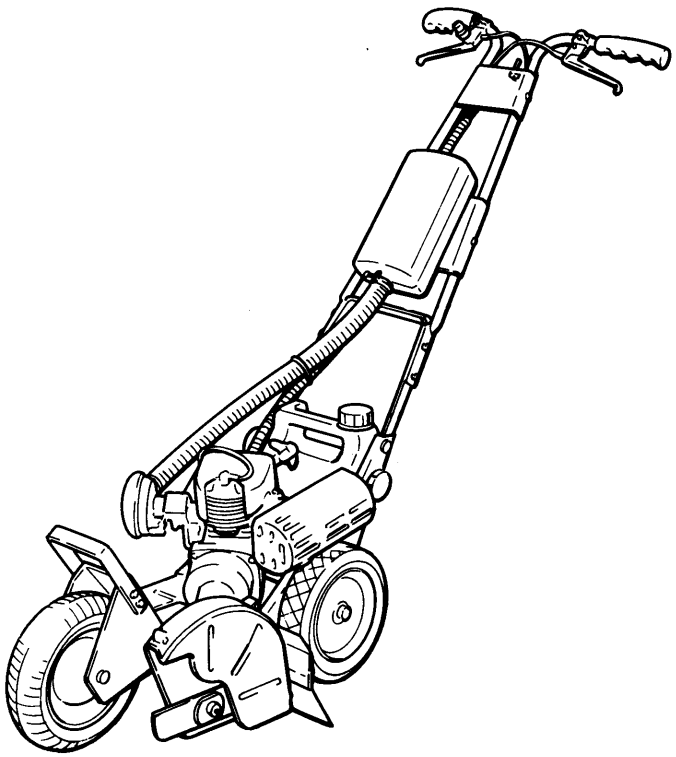
Tanaka

SERVICE MANUAL

LAWN EDGER

TLE-500/550



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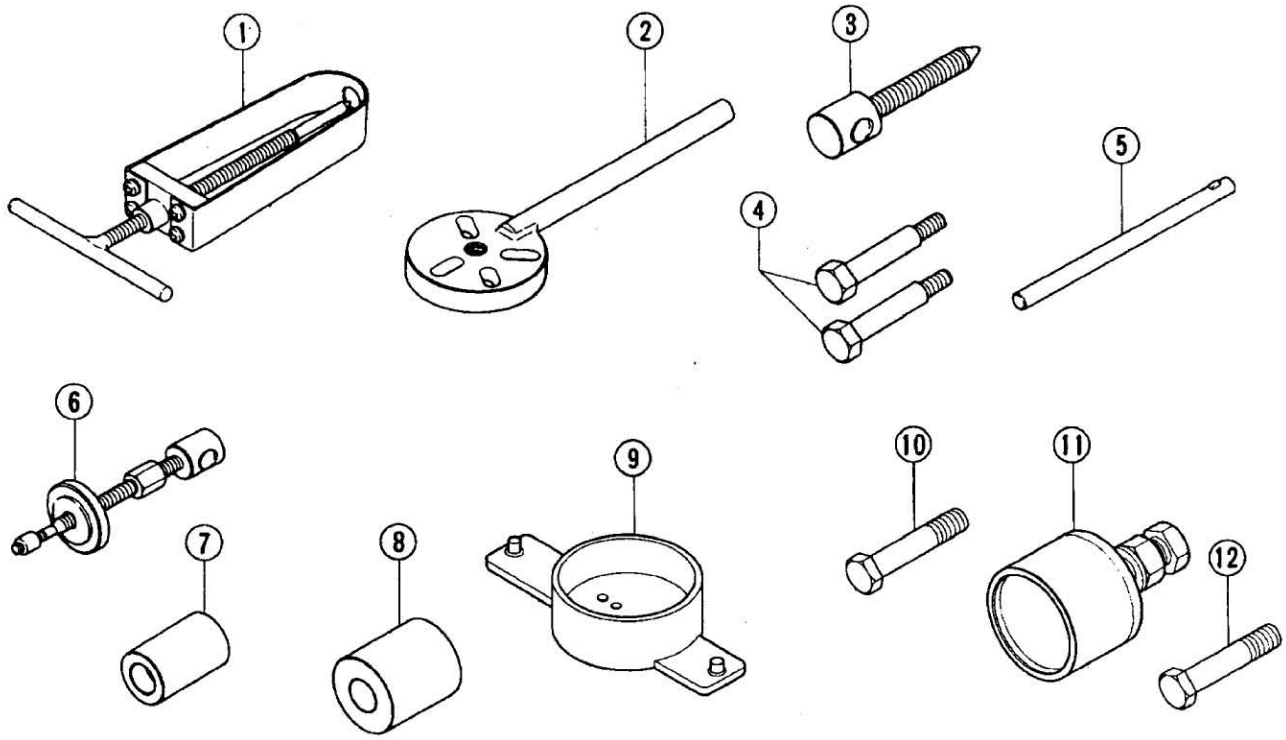
1. SPECIAL TOOLS

Ref. No.	Tool name	Part number	Remarks
1	Piston pin remover	009-29326-000	Fig. 41
2	Rotor remover	006-29326-001	Fig. 35, 33
3	Center bolt	007-29326-000	Fig. 35, 33
4	Step bolt	008-29326-000	Fig. 35
5	Handle 8x120	951-20000-200	Fig. 35, 33
6	Pinion remover	016-29331-100	Fig. 19, 20
7	Pinion inserter	032-29331-100	Fig. 22
8	Gear shaft inserter	031-29331-100	Fig. 21
9	Coil locator	020-29355-000	Fig. 34
10	Clutch flange removing bolt	021-29355-000	Fig. 33
11	Gear shaft remover	015-29331-110	Fig. 19
12	Gear shaft removing bolt	024-29331-100	



2. SERVICE LIMITS 2

2. SERVICE LIMITS

FOR MODELS TLE-500/550

*When measurements exceed limit, replace part

REFERENCES	STANDARD MEASUREMENT		LIMITS		MEASURING POINTS AND TOOLS
	(mm)	(in)	(mm)	(in)	
Cylinder bore	41	1.614	41.10	1.618	Cylinder gauge, Fig. 2
Outer diameter of Piston skirt	41 $^{-0.09}_{-0.11}$	1.610~1.611	40.70	1.602	Micrometer, Fig. 3
Piston ring end gap	0.1~0.3	0.0039~0.0118	0.8	0.0315	Thickness gauge, Fig. 5
Piston ring side clearance	0.045~0.08	0.00177~0.00315	0.2	0.00787	Thickness gauge, Fig. 6
Piston pin outer diameter	10	0.3937	9.960	0.3921	Micrometer, Fig. 7
Piston pin bore	10	0.3937	10.05	0.3956	Cylinder gauge, Fig. 4
Con-rod big end side clearance	0.15~0.3	0.0059~0.0118	0.5	0.197	Thickness gauge, Fig. 9
Eccentricity of crankshaft	0.03	0.0012	0.1	0.0039	Centering blocks and dial gauge, Fig. 10
Crankshaft journal diameter (starter side)	17 $^{-0.007}_{-0.011}$	0.6689~0.6690	16.90	0.6654	Micrometer, Fig. 8
Crankshaft journal diameter (PTO side)	15 $^{-0.007}_{-0.011}$	0.5901~0.5903	14.90	0.5866	Micrometer, Fig. 8
Clutch drum inner diameter	78	3.071	79	3.110	Slide calipers
Clutch drum shaft diameter	17	0.6693	16.97	0.6681	Micrometer
Crankshaft side play	0.03~0.06	0.0012~0.0024	0.1	0.0039	Thickness gauge, Fig.
Gear and pinion	If there is increased backlash, unusual noise or excessive heating of gearcase, check parts and replace as necessary.				
Ball bearing	If bearing has radial play in excess of 0.1mm or is noisy after washing in solvent, replace it.				
Oil seal	Pressure leakage, scratch, crack of any other damage noted, replace.				
Plug gap	0.6mm	0.024			Thickness gauge
Coil core-air gap	0.35±0.05	0.014±0.002			Special tool

3. TORQUE TABLE

ORDINARY NUTS AND BOLTS

SIZE	kg-cm	in-lb
M4 SCREW	20 - 30	17 - 26
M5 SCREW	40 - 50	35 - 45
M6 SCREW	60 - 70	50 - 60
M8 HEX HEAD BOLT	150 - 200	130 - 175
M10 HEX HEAD BOLT	300 - 400	260 - 345
M4 ALLAN HEX BOLT	25 - 30	22 - 26
M5 ALLAN HEX BOLT	45 - 50	40 - 45
M6 ALLAN HEX BOLT	180 - 100	70 - 87
M8 ALLAN HEX BOLT	200 - 250	175 - 220

SPECIAL FASTENERS

REF	kg-cm	in-lb
FLYWHEEL NUT	350 - 400	300 - 350
CLUTCH STEP BOLT	200 - 250	175 - 220
SPARK PLUG	150 - 200	130 - 175
CYLINDER	60 - 70	50 - 60
CRANK CASE	60 - 70	50 - 60
BLADE NUT 10mm	300 - 400	260 - 350
BLADE NUT 12mm	500 - 600	435 - 520

FASTENERS NEEDING LOCKING SEALANT

1) RECOIL STARTER SET BOLT

4. GENERAL INSPECTION

1. Use genuine TANAKA replacement parts.
2. Use special tools where specified.
3. Always use new packings, gaskets, and O-rings during reassembly.
4. Tighten screws, bolts, and nuts according to the specified torques.
5. Clean and apply a small amount of oil to moving parts before reassembly.
6. After assembly, check for correct construction before attempting to start the engine.

1) CRANKCASE

The crankcase is made of diecast aluminum and consists of two pieces which are tooled together and supplied together as replacement parts. The crankcase induces an air-fuel mixture from the carburetor and compresses the mixture in the crankcase and forces it into the cylinder. Therefore sealing is essential. (See Fig. 1)

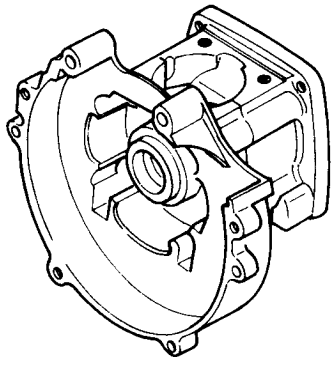


Fig. 1

2) CYLINDER

The cylinder wall must be smooth in order to provide compression therefore if scratches or scoring exists, the cylinder must be replaced. Measure the cylinder bore with a cylinder gauge. If it, exceeds the limit, replace. (See Fig. 2)

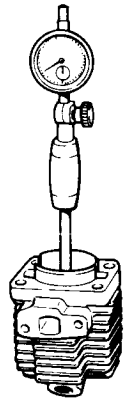


Fig. 2

3) PISTON

Measure the lower surface (skirt) of the piston. If it exceeds the limit, replace. (See Fig. 3)

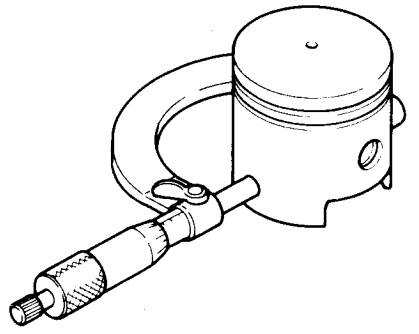


Fig. 3

4) PISTON PIN BORE

Measure the piston pin bore of the piston with a cylinder gauge. If it exceeds the limit, replace piston. (See Fig. 4)

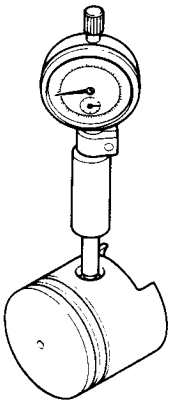


Fig. 4

5) PISTON RING END GAP

Piston rings are made of special metal and to improve anti-wear capabilities, surface treatment is applied. Insert the ring into the lower part of the cylinder. Measure the piston ring end gap with a thickness gauge. If it exceeds the limit, replace. (See Fig. 5)

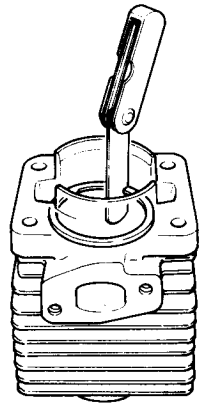


Fig. 5

6) PISTON RING SIDE CLEARANCE
Measure with a thickness gauge. If it exceeds the limit, replace piston and/or piston rings. (See Fig. 6)

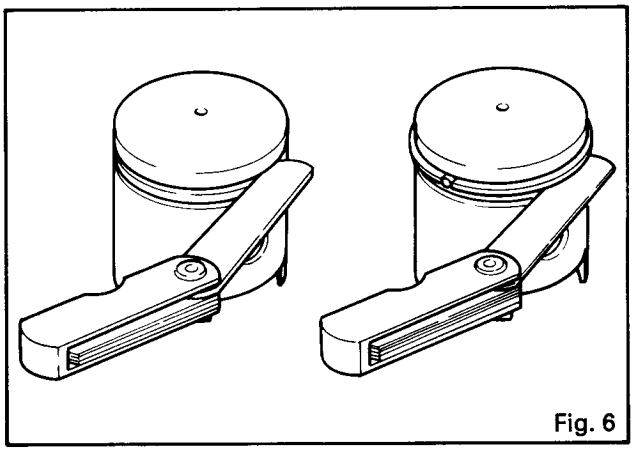


Fig. 6

7) PISTON PIN
Measure with a micrometer at the center of the piston pin. If it exceeds the limit, replace. (See Fig. 7)

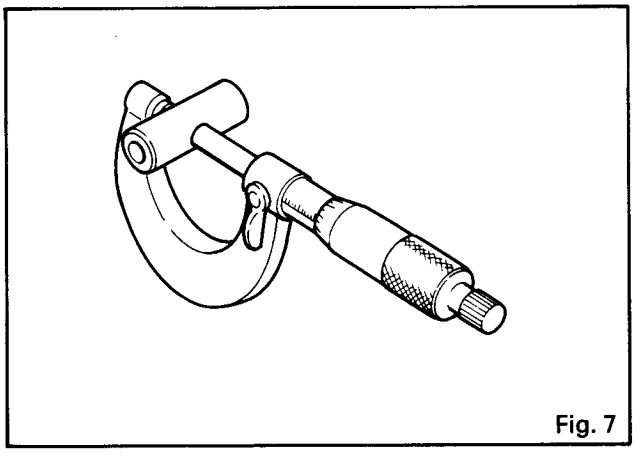


Fig. 7

8) CRANKSHAFT JOURNAL
Measure with a micrometer. If it exceeds the limit, replace crankshaft comp. (See Fig. 8)

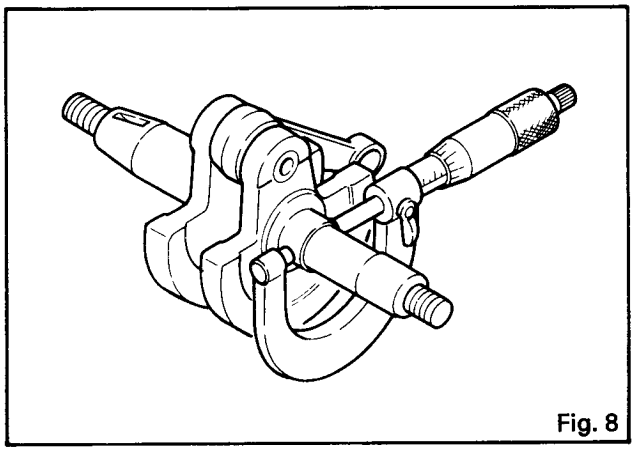


Fig. 8

9) CONECTING ROD/BIG END SIDE CLEARANCE
Measure with thickness gauge. If it exceeds the limit, replace crankshaft comp. (See Fig. 9)

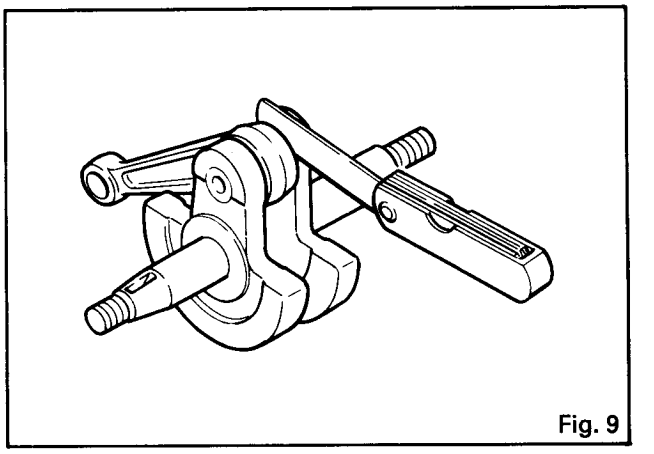


Fig. 9

10) ECCENTRICITY OF CRANKSHAFT
Measure runout with dial indicator. If over limit, replace crankshaft comp. (See Fig. 10)
NOTE: When the crankshaft needs replacement it must be replaced as a crankshaft comp. The crankshaft and connecting rod are preassembled.

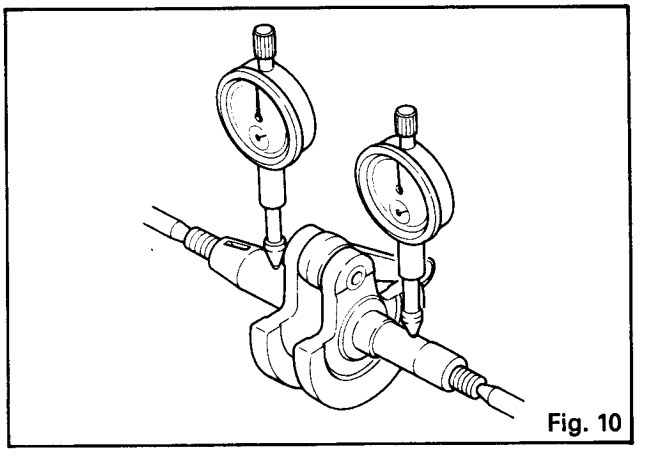


Fig. 10

11) CENTRIFUGAL CLUTCH
This clutch consists of three weights (shoes) supported by springs individually. These weights expand and engage the clutch. Standard clutch in rpm is 3500 ± 200.

12) SPARK PLUG

This generates spark between the center electrode and the outer electrode in order to ignite the fuel in the cylinder. If the electrode burns out or excessive carbon accumulates around the electrodes, it will cause reduced power and/or hard starting. In this case replace or clean and regap according to its condition. Standard spark plug gap is 0.6mm/0.024in. (See Fig. 12)

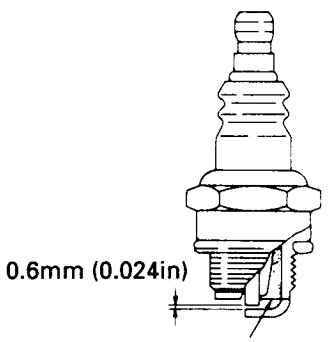


Fig. 12

13) IGNITION COIL INSPECTION

A. The gap between the ignition coil and the flywheel magneto should be 0.35 ± 0.05mm (0.012 ~ 0.016 in).
Fig. 13

B To check the ignition coil, check the ground wire to the core and primary cord for soldering, the secondary cord for damage and connection to the spark plug cap.

C. Attach the tester terminal to the iron core of the ignition coil and to the plug cap or secondary cord and measure the resistance on the ignition coil secondary winding side. If the resistance is not within 5.3Ω ± 10%, replace the ignition coil.
Fig. 13-1

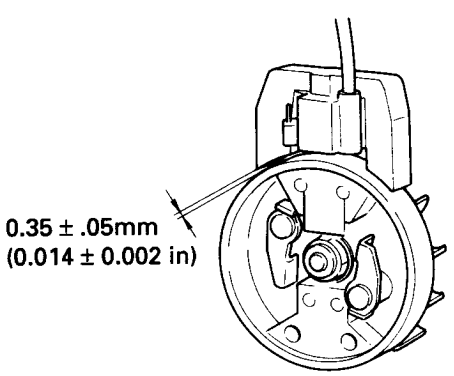


Fig. 13

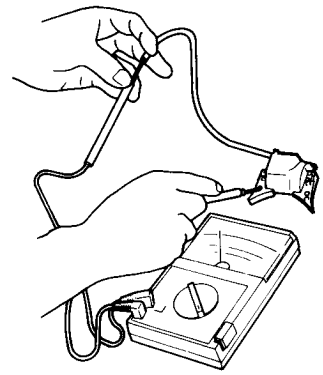


Fig. 13-1

14) IGNITER

On the TLE-550, the igniter is built into the ignition coil. The igniter is an electronic, non-contact device. The ignition timing is controlled by the electronic circuit and, thereby, avoiding problems caused by worn or rusted contacts, which may occur in the point's type system and a consistant spark performance is maintained for a long period of time.

INSPECTION

A. Check for spark by removing the spark plug from the engine and hooking the plug cap to it, then ground the spark plug body to the engine and pull the recoil start forcibly.

NOTE: It is recommended to use a new spark plug.

B. If no sparks jump, replace the ignitor on the TLE-500 or the coil on the TLE-550.

CAUTION: There are electronic parts installed within the ignitor. Do not heat the ignitor or apply excessive force to it.

15) INSPECTION OF CYLINDER COMPRESSION

Remove the spark plug, install a compression gauge to the plug opening and pull the recoil starter several times to stabilize reading. When the compression pressure is excessively low, check the piston rings, piston and cylinder, and, if necessary, replace. When the compression pressure is excessively high, check inside of the combustion chamber and exhaust port for carbon build up, and remove it if necessary.

STANDARD COMPRESSION

7.0 ~ 9.5kg/cm² (100 ~ 135psi)

16) TANK CAP

The fuel tank cap is designed to allow air to get into the tank while not allowing fuel to leak out; at the same time it has a pressure relief-feature to help avoid carburetor flooding due to heat induced expansion in the fuel tank.

FOR TLE-500

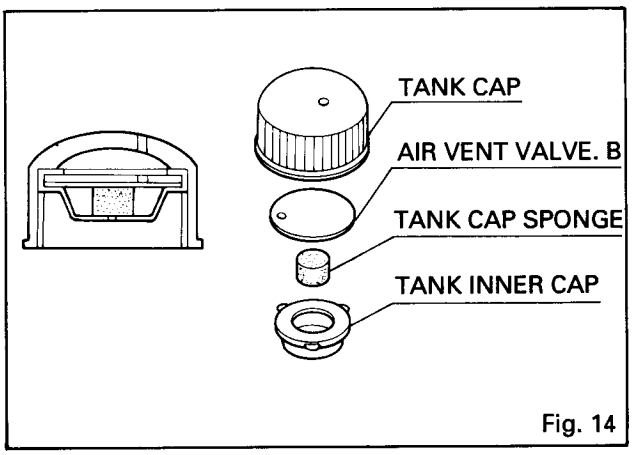


Fig. 14

FOR TLE-550

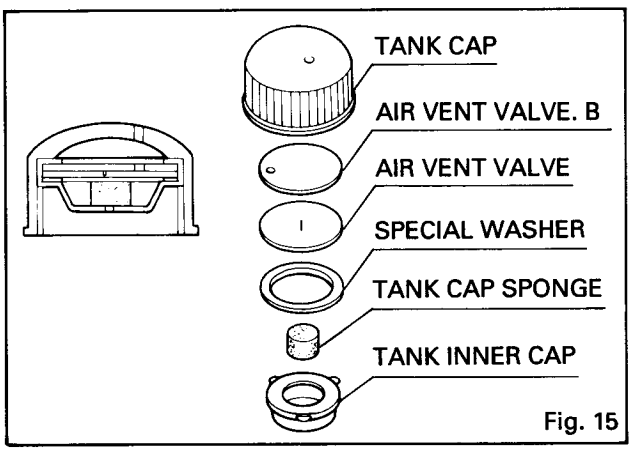


Fig. 15

5. DISASSEMBLY AND ASSEMBLY OF EDGER

1) Remove the blade and cutter holder. Remove the 65mm snap ring, remove the wing bolt which holds the guard in position and remove the guard. Fig. 16

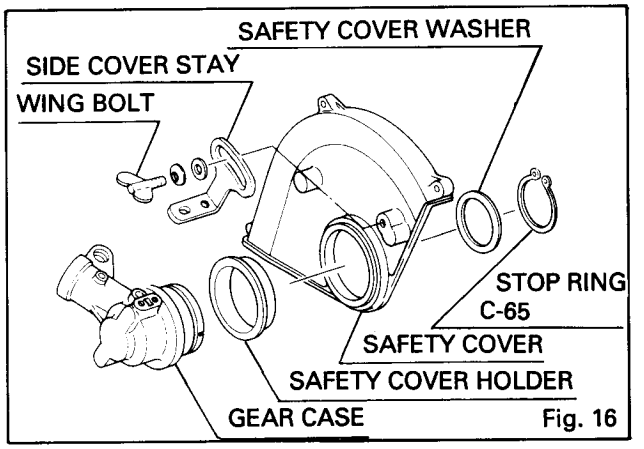


Fig. 16

2) To remove gear case loosen 8mm allen bolt and remove 6mm locator bolt then twist and pull gear case off of shaft pipe. Pull out drive shaft. Fig. 17

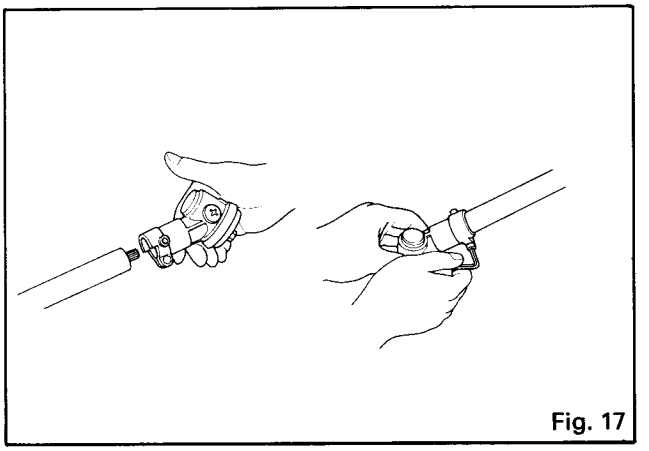


Fig. 17

3) Disassembly of gear case

A. Pull out shaft to disassemble gear case, remove the 52mm snap ring on the output side and the 32mm snap ring on the input side. Fig. 18

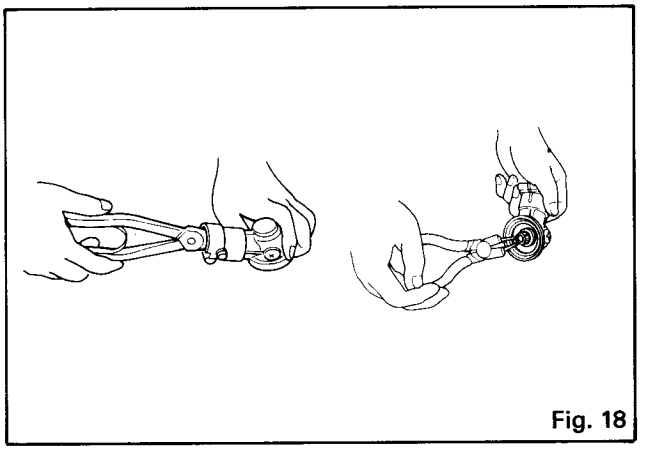


Fig. 18

B. Using the special tool (015-29331-110) pull the gear shaft, ball bearings and gear out of gear case. (output side) Fig. 19

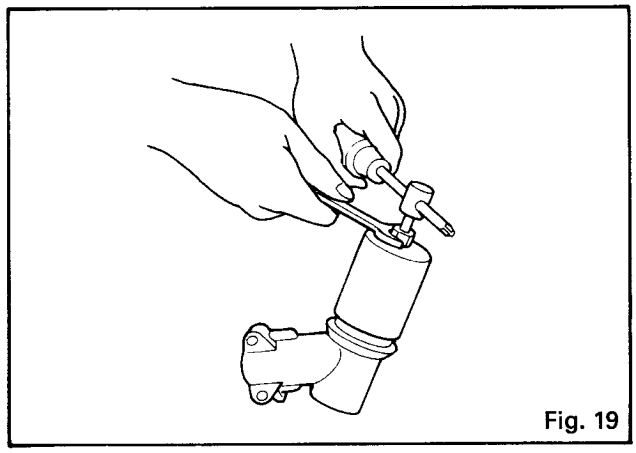


Fig. 19

Inspect for worn or damaged gear or shaft. Also, check ball bearings for wear or noise.

C. Remove the pinion and bearings with special tool (016-29331-100) from the input side of the gear case. Fig. 20

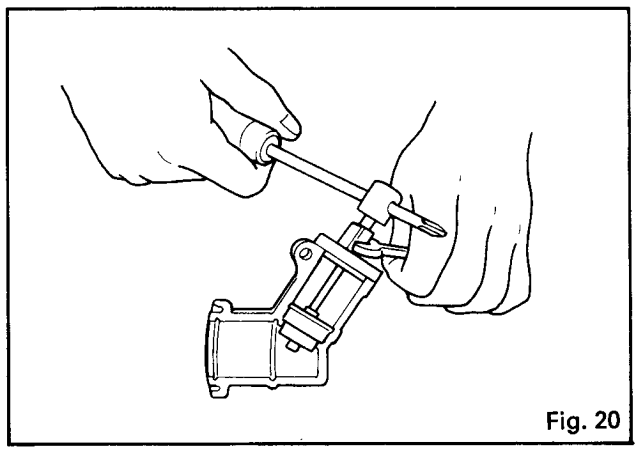


Fig. 20

Inspect for wear or damage to the pinion and ball bearings replace parts as necessary.

NOTE: Gear shaft puller (015-29331-110) is for the TLE-550(12mm). The same puller may be used for the TLE-500 which has a 10mm shaft. For this application replace the center bolt using 024-29331-100.

4) Assembly of gear case

A. Place the gear in gear case first, install gear shaft and bearing by tapping in with a soft hammer until the snap ring groove is exposed then install snap ring. Fig. 21

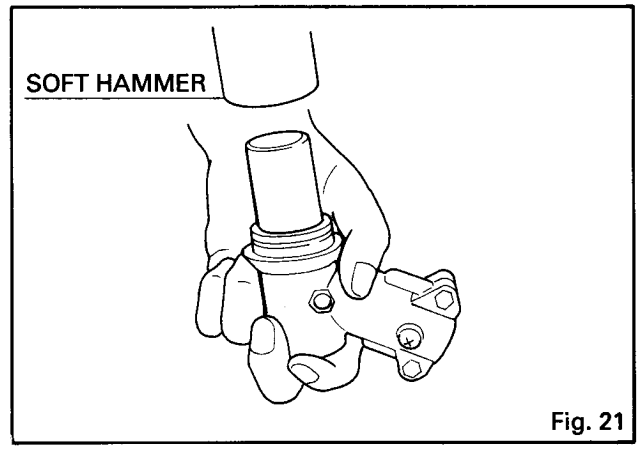


Fig. 21

B. Install the pinion and bearings by tapping with a soft hammer making sure the gears mesh and turn smoothly, then install snap ring. Fig. 22

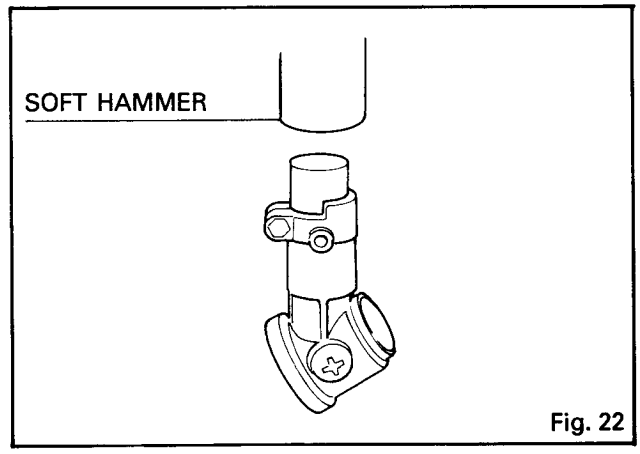


Fig. 22

NOTE: Make sure seal side of sealed bearing is facing out. Fig. 23

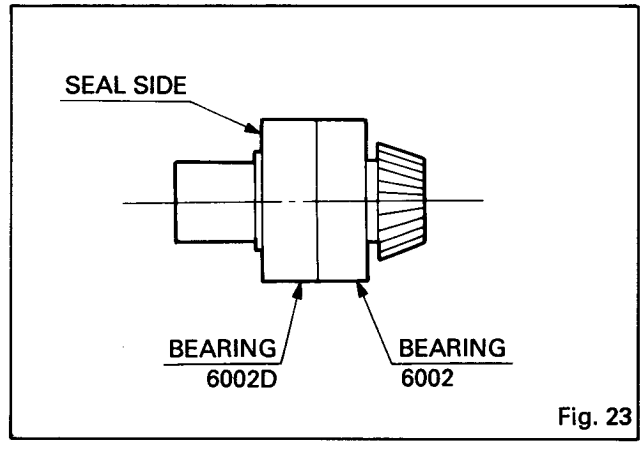


Fig. 23

C. Fill gear case with lithium base grease 25g (0.9fl-oz).

5) Remove clutch case by first removing 6mm hex bolt holding angle bracket to clutch case then remove four 5mm allen bolts which hold clutch case onto engine.

6) Disassembly and assembly of clutch drum

A. Remove drive shaft pipe, then reach through hole in clutch drum with snap ring pliers and remove 40mm snap ring. Fig. 24

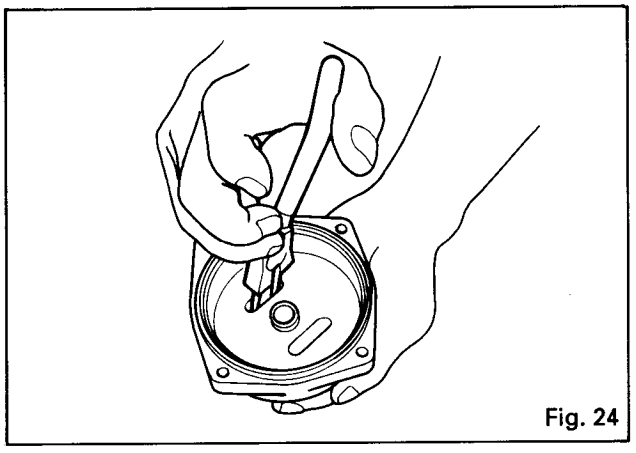


Fig. 24

B. Support clutch housing, knock the clutch drum and bearing out with hammer and large punch. Fig. 25

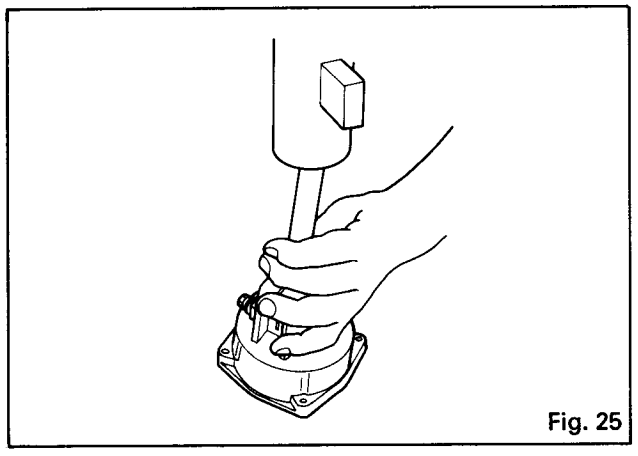


Fig. 25

Inspect clutch drum for wear on engaging surface. Also, check for wear on clutch drum shaft where it fits into the bearing. Be sure to inspect ball bearing and replace if noisy or loose.

C. To reassemble, press bearing onto clutch drum, install snap ring, then press drum and bearing assembly into clutch case and install 40mm snap ring.

7) Fuel tank (TLE-550) is secured by four screws. Do not overtighten these screws as this could cause the tank to leak. Fuel filter can be removed without removing tank by simply pulling out the rubber pipe from tank.

6. DISASSEMBLY AND ASSEMBLY OF ENGINE

1) REMOVAL OF ENGINE

A. To work on the engine it must first be removed from the edger.

B. Remove the clutch case and gear case by reference to section five paragraph three. (It can be removed after the engine is removed from the base.)

C. Unplug the stop cord wire from the engine, then disconnect the throttle wire from control lever. Remove ground wire from fan case (not present on all models).

NOTE:

a) When assembling make sure the stop cord and earth cord are properly connected. If these connections are reversed, the engine will not start.

b) When installing throttle wire, make sure the tapered end of return spring goes up.

D. Remove the cleaner band screws and remove the cleaner cap. (TLE-550) To install the both upper and lower cleaner element, thoroughly wash the element with gasoline, immerse in 2-cycle oil, squeeze tighly and install to the body. Clean the upper cleaner every day or every eight hours of operation and every 50 hours of operation for lower cleaner. More frequent cleaning is recommended under hevy dusty conditions. Fig. 26

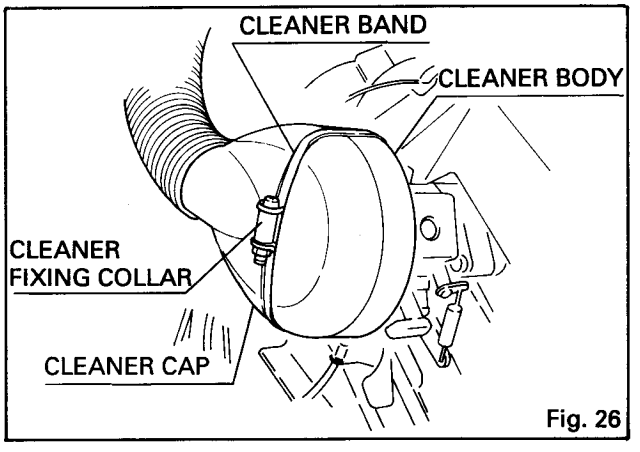


Fig. 26

NOTES:

a) Properly insert the rubber pipe into the cleaner hose as shown below. Tighten the wire band securing the cleaner hose to it. Be careful not to position the wire band over the rubber pipe as it will reduce the air flow to the carburetor and affect performance. Fig. 27

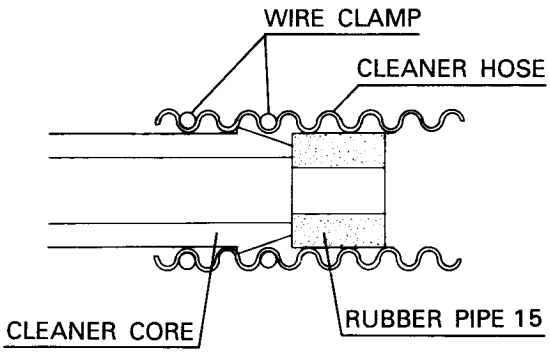


Fig. 27

b) The cleaner hose length should be 550 + 5mm (21.5 ~ 22.0") The wrong cleaner hose length will affect the engines performance.

CHECK: Air cleaner hose for damage (holes) and make sure fittings and clamps are secure. Any air leakage could lead to serious engine damage.

E. Remove the four 6mm nuts that mount the engine to the base, then lift the right front of the engine up. Pivot it on the left rear stud until it comes free of the base. Fig. 28

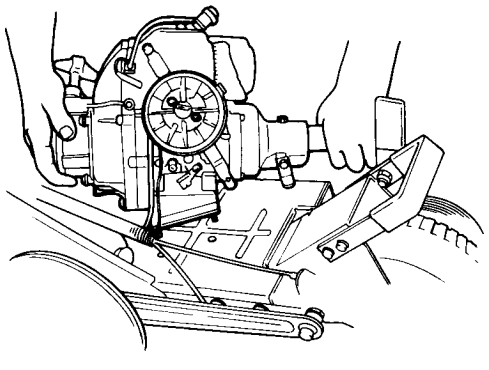


Fig. 28

NOTE: Install engine to base by inserting the left rear engine mount bolt to the base first.

2) DISASSEMBLY AND ASSEMBLY OF ENGINE

A. Remove the clutch springs as per figure (Fig. 29), then remove the clutch step bolts and clutch arms. Fig. 30

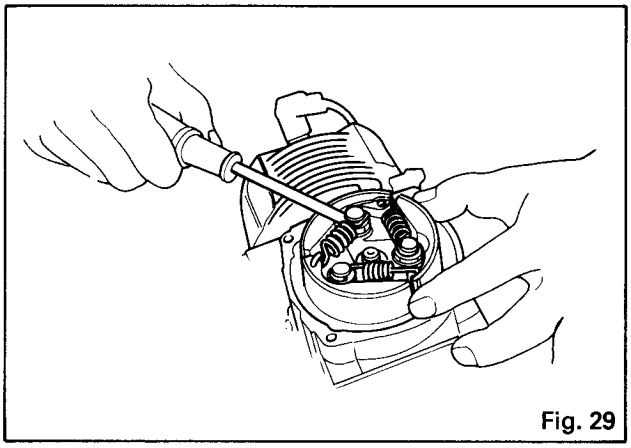


Fig. 29

CHECK: Clutch springs for damage, clutch shoe lining for wear and smooth movement of clutch arms.

NOTE:

a) When assembling apply a coat of grease to clutch step bolt.

b) When assembling place smooth side of clutch washer facing to clutch arm side. Fig. 30

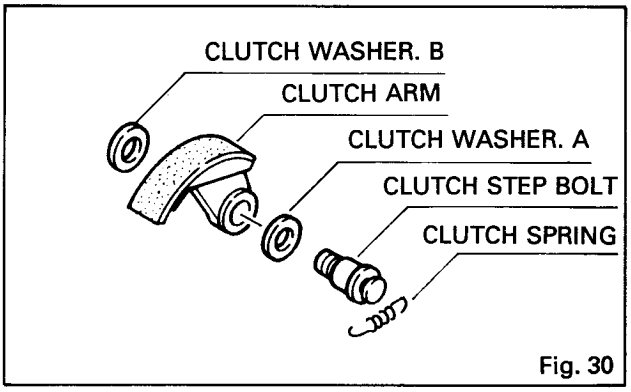
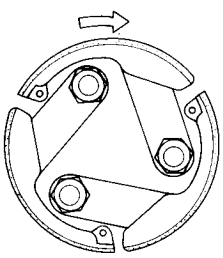


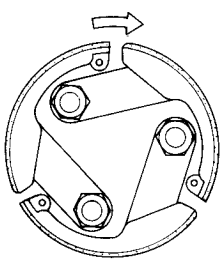
Fig. 30

There are two different clutch shoes, see Fig. 31 and Fig. 32.



TLE-550
G199940

Fig. 31



TLE-500
TLE-550

Fig. 32

B. Remove the 10mm NUT (L.H thread) securing the clutch flange and remove the flange using the rotor remover (006-29326-001). Fig. 33

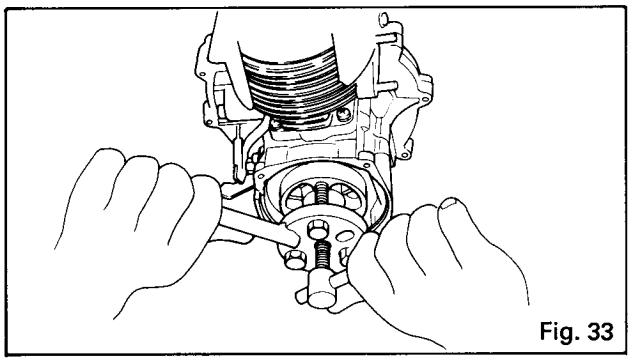


Fig. 33

C. Remove the recoil starter, then remove the fan case. The ignition coil is mounted in the fan case. Fig. 34

NOTE: When installing the coil in the fan case, the coil locator tool (020-29355-000) must be used. First, insert the locator tool in the fan case as shown then mount the coil up against the locator and tighten the two screws. This will give an air gap of 0.35 ± 0.05mm (0.014 ± 0.002 in).

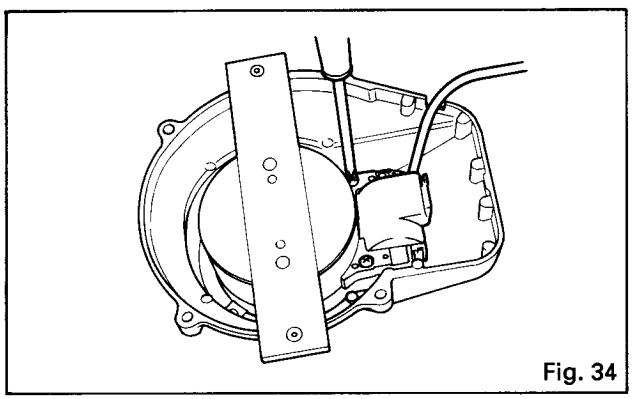


Fig. 34

D. Remove the 10mm nut (L.H. thread) securing the magneto rotor. Then remove the rotor using the rotor remover (006-29326-001).

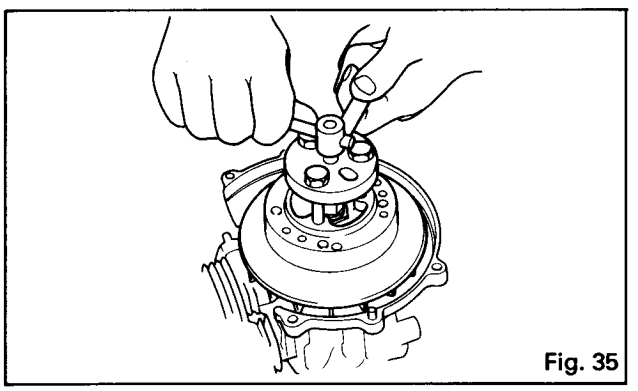


Fig. 35

E. Dissassembly and assembly of mechanical governor

a) Remove the woodruff key for magneto rotor then remove the governor cover and gasket, remove the circlip and pull the governor assembly off of the shaft. Then remove the oil partition and governor shaft arm. Fig. 36

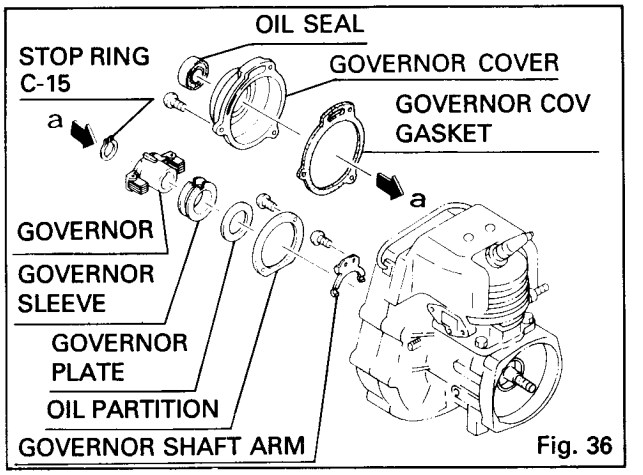


Fig. 36

CHECK: Wear or damage to governor assembly, wear or damage to governor shaft arm, and check oil seal.

NOTE:

1 When assembling make sure the oil partition plate is cut side down.

2 Before installing the governor cover lubricate the chamber with 15 ~ 16cc (0.5fl-oz) of SAE, #30 ~ 90W oil. (The governor oil reservoir must be checked at the oil level screw after every 100 hours of operation. Fig. 54)

b) Remove the screw securing the governor lever assembly and remove it. At this time, also remove the governor spring from the governor spring lever. Install the governor spring to the governor spring lever, install the governor lever assembly to the crank case and tighten the screw temporarity. For adjustment of governor see page 17.

F. After removing the muffler nuts, remove the muffler and muffler gasket.

NOTE: Inspect muffler for carbon build-up and clean or replace as necessary.

G. Remove the screws securing the cylinder and pull the cylinder off the crankcase, before installing the cylinder apply a thin coat of oil to the piston. Align each piston ring with the locator pin, slowly insert the piston into the cylinder while compressing the rings in with the your fingers. Then install and tighten the cylinder screws. Fig. 37

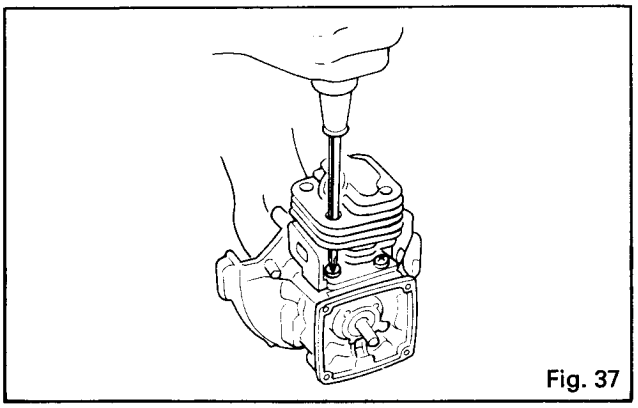


Fig. 37

CHECK: Cylinder for wear and damage, exhaust port for carbon build up and cylinder fins for debris.

H. Disassembly and assembly of crank case
a) Before separating the crankcase, remove the crankshaft keys, then remove the four crankcase screws and the engine bed screws. To divide the crankcase, lightly tap the crankshaft with a soft hammer, taking care not to damage the crankcase fitting surface. Remove crankshaft. Fig. 38

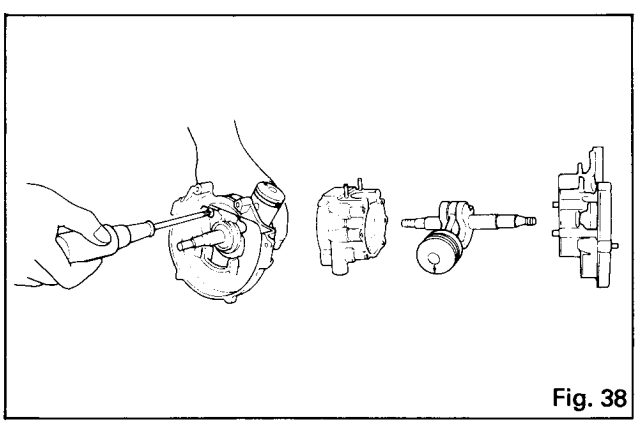


Fig. 38

CHECK:
1 Damage to ball bearings and oil seal.
2 Rod bearing for damage and clearance.

NOTE: Use new crankcase gasket and cut off excess gasket material when assembling.

b) Apply a coat of grease to the lip of each oil seal, then install shims on the crankshaft and insert crank into the cases.

c) After tightening the crank case screws, move the crankshaft to one side and measure the crankshaft side play with a feeler guage. Install shims on the crank shaft to adjust clearance, which should be 0.03 ~ 0.06mm (0.0012 ~ 0.0024 in). Fig. 39

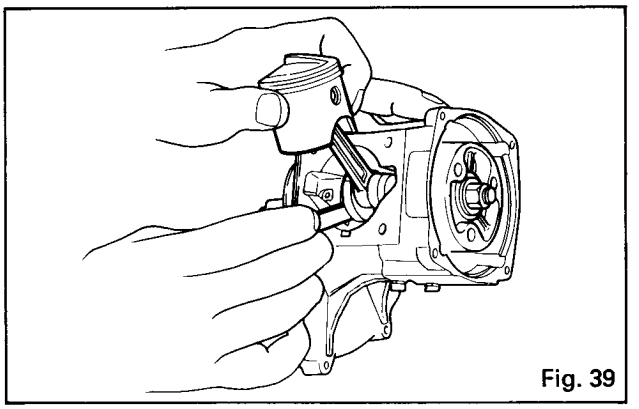


Fig. 39

I. Remove the rings from the piston by spreading the rings with your thumbs just enough to get them off. The top ring is chrome plated. Fig. 40

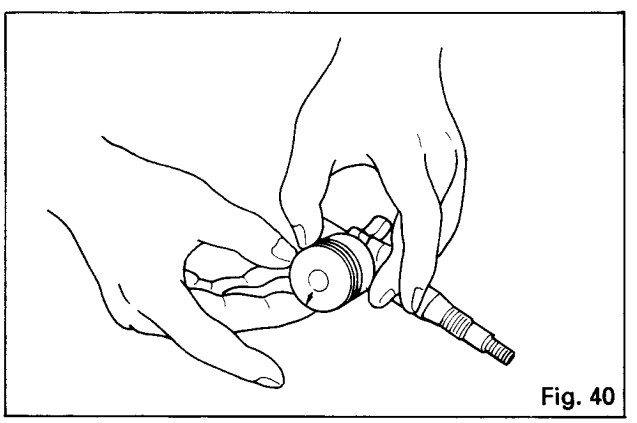


Fig. 40

J. Remove the circlips with longnose pliers. Taking care not to scratch the piston (use new circlips when installing).
Using the piston pin remover (009-29326-000) push the piston pin out and remove piston. Fig. 41

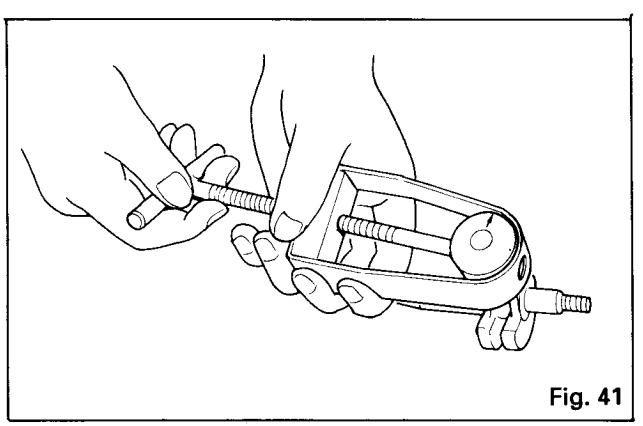


Fig. 41

NOTE: You may need to use a 6mm Phillips head screw in the end of the piston pin to push against with the pin remover bolt.

CHECK: Damage to piston, wear on piston or excessive carbon (clean off)

K. Insert one circlip in the piston. Face the slope of the piston toward the exhaust and, using the piston pin remover, install the pin thru the piston and conn rod, being careful not to dislodge any of the rollers on the small end bearing. Then install the other circlip. Fig. 42
Double check the circlips!

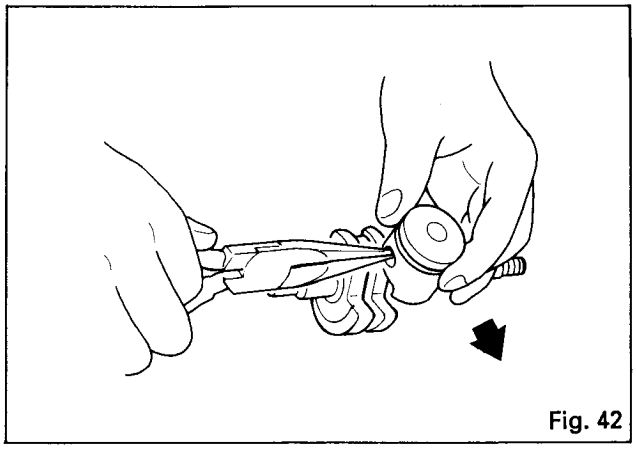


Fig. 42

7. DISASSEMBLY AND ASSEMBLY OF RECOIL STARTER

1) Disassembly of recoil starter

A. Pull the starter handle out about 12 inches and tie a loose knot in the rope so the rope won't go back in. Remove the knot cover from the starter handle, slide the handle down the rope and untie the knot or cut the rope if necessary. Fig. 43

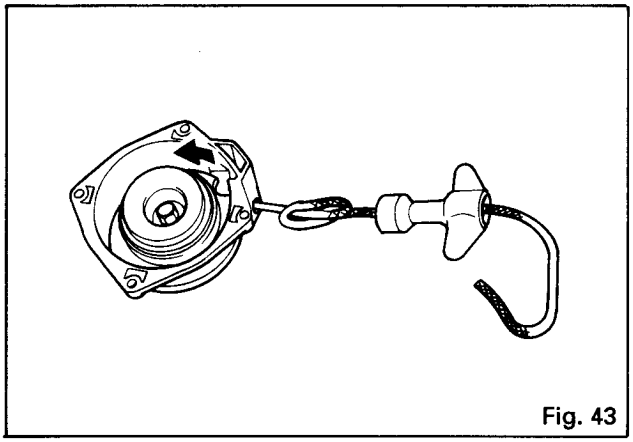


Fig. 43

Untie the temporary knot and let the recoil spring unwind slowly.

B. Remove the set bolt then remove the friction plate, pawl friction spring and reel. Fig. 45

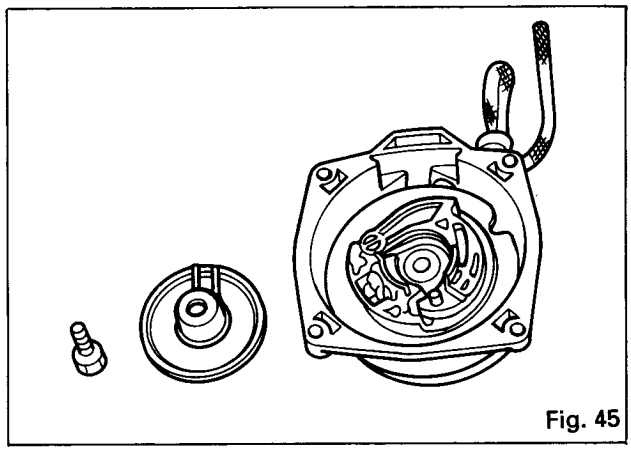


Fig. 45

If you are not replacing the recoil spring do not disturb it.

CAUTION: When removing the reel the recoil spring may fly out. Be careful! Eye/face protection is recommended when replacing the recoil spring.

2) Assembly of recoil starter

A. Insert the outer hook of the recoil spring into the groove within the recoil starter body. Fig. 46

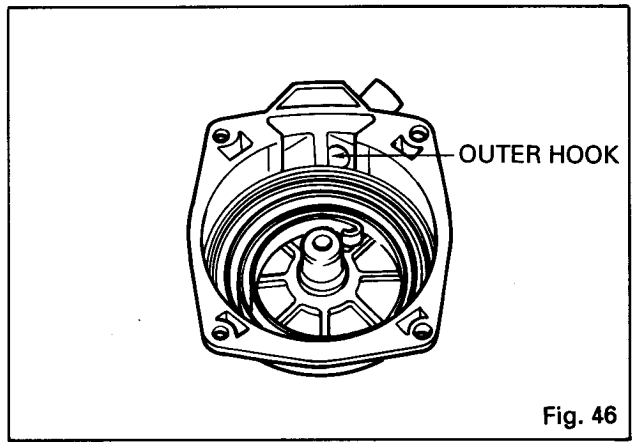


Fig. 46

NOTE: Install the spring so that it turns clockwise as viewed from the mounting side.

B. Apply a light coat of grease to the shaft of the recoil body and to the recoil spring.

C. Wind the starter rope onto the reel in a clockwise direction as viewed from the pawl side. Fig. 47

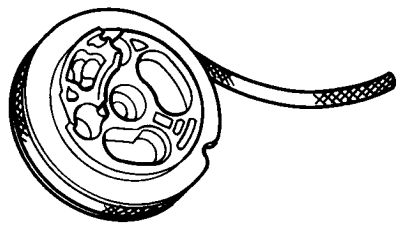


Fig. 47

D. Insert reel into the starter body and make sure the hook of the recoil spring drops into the slot on the bottom of the reel. Turn reel a bit clockwise to check for spring return.
Install friction spring, pawl and friction plate. Then install bolt and tighten it.

NOTE: Use thread lock sealant on bolt.

E. Feed the end of the rope thru the hole in the recoil starter body then feed it in thru the handle and tie a knot in the end of it. Hold the rope and pull on the handle to seat the knot then put the cap over the knot hole.

F. To wind the recoil spring, pull the rope within the recoil starter body into a loop and with the reel end of the rope in the notch of the reel, wind the reel around two turns clockwise, then release the rope. If there is insufficient tension on the rope, wind it one more turn. Fig. 44

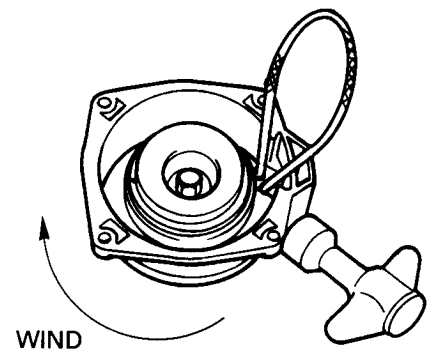


Fig. 44

NOTE:
a) Standard rope length is 103mm (40") and extended length (between housing and handle) is about 900mm (35") if longer than these dimentions, it may break recoil spring.
b) When the rope is pulled all the way out you must be able to turn the reel one or more additional turn before it stops. Otherwise, the spring might break.

8. CARBURETOR MAINTENANCE AND ADJUSTMENT

1) Precautions for disassembling and assembling the carburetor.
A. Handle parts with care. Clean all parts thoroughly. Replace any damaged parts. Be sure to use new gaskets when assembling carburetor.
B. Wash the parts with fresh cleaning fluid and blow the fluid away with air. Put the parts in a clean place that is free of dust, cloth, fibers, dirt, etc.
C. When assembling the carburetor, take care not to over tighten the bolts, nuts, etc., and once again, keep it clean.
NOTE: Do not use wire to clean jets. It may cause damage, which could effect engine performance.

2) Maintenance of carburetor. To maintain the proper performance of the carburetor, check the following items on a regular basis:
A. Deformation of the valve spring (TLE-550)
B. Deformation of the float arm (TLE-500)
C. Damage to diaphragm (TLE-550)
D. Clogged hole in the slow jet (TLE-500)
E. Clogged hole in the main jet (TLE-500)
F. Wear on the valve seat
G. Wear on the needle valve
H. Clogged inlet screen (TLE-550)
I. Deformation of control lever (TLE-550)
J. Replace metering diaghragm if hardened (TLE-550)
K. Replace pump diaghragm if hardened (TLE-550)
L. Periodically check and replace the rubber parts and gaskets as necessary.
M. Always use fresh fuel. Fuel which has been stored for extended periods of time will damage carburetor parts and decrease performance.
N. Carburetor performance is effected slightly by weather, altitude, break-in etc, but it is generally not necessary to readjust the carburetor. If necessary, refer to carburetor adjustment procedures.

3) Adjustment of carburetor:

TLE-500:

A. Turn the air screw in until it seats gently then back it out to 2 1/4 turns (STD).

B. Adjust the idling speed with idle screw, idle speed is 2500 ± 200 rpm. (Fig. 48)

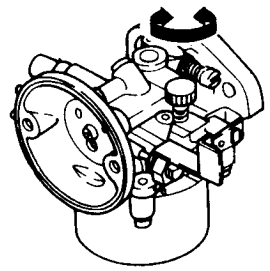


Fig. 48

C. Adjust the float arm height so that the float arm is 4mm (0.160") above the chamber packing surface (Fig. 49)

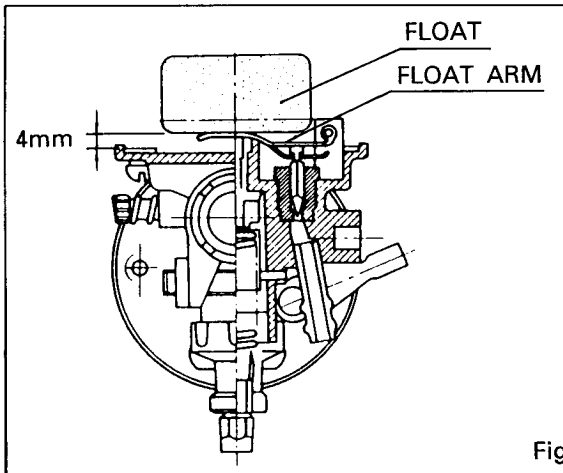


Fig. 49

TLE-550:

A. High and low speed screw adjustment

a) Adjust both the high speed and low speed needle screws to 1 1/4 turns out. (Fig. 50)

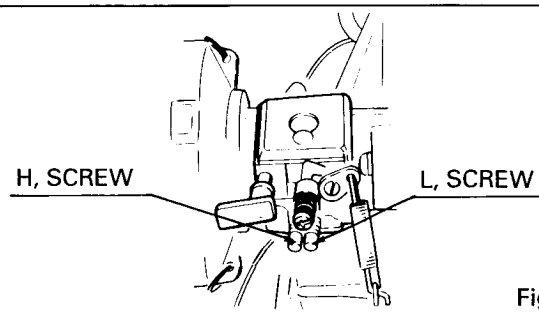


Fig. 50

b) Start engine and allow to run few a minutes to warm up. Adjust low speed needle screw to obtain maximum consistant idling.

c) Turn low speed needle screw slightly counter clockwise to obtain smooth acceleration. Readjust idle speed to 2500 rpm.

d) Adjust high speed needle screw until you hear a slight 4 stroke sound at full throttle.

CAUTION: Lean carburetor setting can cause serious damage. Always richen the fuel mixure from the highest rpm.

B. The control lever height is very important and should be adjusted with a measuring guage. Adjust to +0.25 ~ –0.1mm (+0.010 ~ –0.04in) reference to the carburetor body surface. Fig. 51. When the control lever is too high, the mixture becomes too rich and when too low, the mixture becomes too lean.

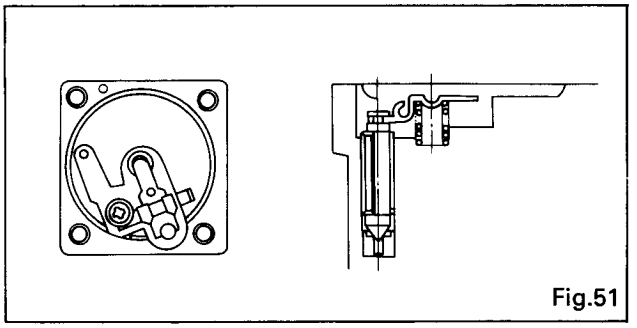


Fig.51

NOTE: When assembling install the diaphragm to the carburetor so that the pin in the center of the metering plate comes in contact with the metering lever.

C. To check the integrity of the needle valve use a pressure pump and guage. Connect the guage hose to the fuel input fitting and apply pressure of 0.4 to 0.5 kg/cm² (5.7 to 7.1 PSI) to the carburetor.

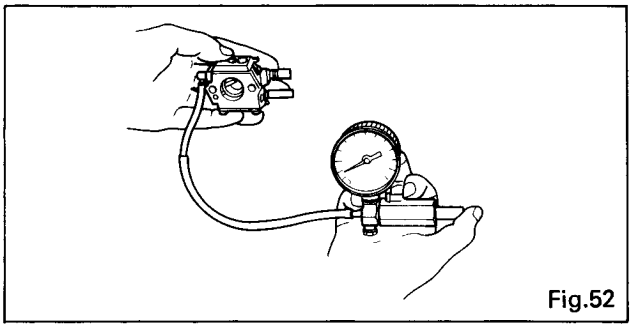


Fig.52

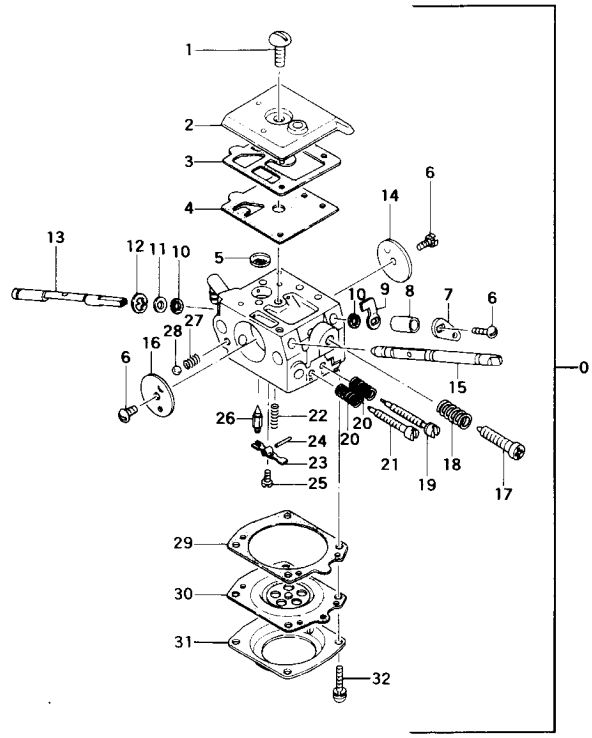
If the pressure drops in a few seconds.

CHECK:

1) Worn needle valve.
2) Dirt or dust on valve seat.
3) Assembly of control lever spring.
4) Height of control lever.

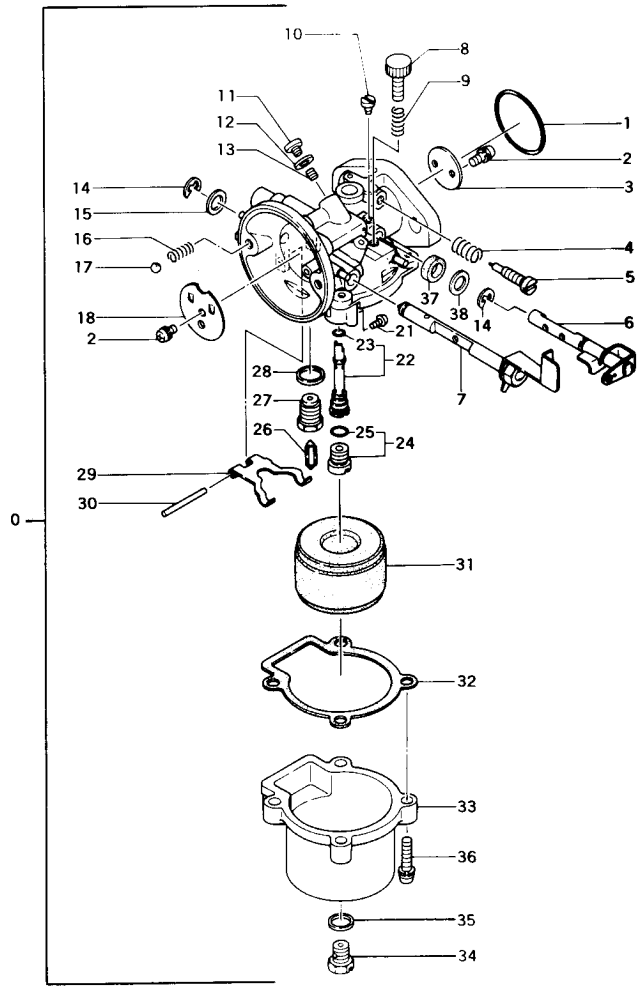
TLE-550

REF.No.	P.P.No.	PARTS NAME	Q'ty
4-000	455-25111-900	CARBURETOR ASS'Y	1
4-001	514-25001-200	SET SCREW	1
4-002	575-25012-200	PUMP BODY	1
4-003	577-25012-200	PUMP GASKET	1
4-004	576-25012-200	PUMP DIAPHRAGM	1
4-005	578-25007-200	INLET SCREEN	1
4-006	467-25003-200	SHUTTER SCREW	3
4-007	491-25031-200	THROTTLE LEVER	1
4-008	437-25031-200	SLEEVE	1
4-009	559-25012-200	STOP PLATE	1
4-010	502-25111-200	FILTER	2
4-011	549-25100-200	THRUST WASHER	1
4-012	489-25008-200	STOP RING	1
4-013	464-25111-200	THROTTLE SHAFT	1
4-014	488-25001-200	THROTTLE VALVE	1
4-015	492-25032-200	CHOKE SHAFT	1
4-016	493-25111-200	CHOKE VALVE	1
4-017	462-25006-200	IDLE ADJUST SCREW	1
4-018	463-25012-200	IDLE ADJUST SPRING	1
4-019	461-25111-200	SLOW ADJUST SCREW	1
4-020	623-25001-200	HIGH/LOW ADJUST SPRING	2
4-021	460-25036-200	HIGH ADJUST SCREW	1
4-022	477-25012-200	VALVE SPRING	1
4-023	473-25012-200	CONTROL LEVER	1
4-024	605-25001-200	HINGE PIN	1
4-025	546-25001-200	HINGE PIN SET SCREW	1
4-026	603-25012-200	NEEDLE VALVE	1
4-027	496-25032-200	CHOKE SPRING	1
4-028	567-25032-200	STEEL BALL	1
4-029	475-25012-200	DIAPHRAGM GASKET	1
4-030	474-25012-800	METERRING DIAPHRAGM COMP.	1
4-031	476-25012-201	DIAPHRAGM COVER	1
4-032	548-25012-200	SET SCREW	4



TLE-500

REF.No.	P.P.No.	PARTS NAME	Q'ty
5-000	455-20702-903	CARBURETOR ASS'Y	1
5-001	550-20701-200	O-RING	1
5-002	994-14030-050	SCREW 3X5/S	3
5-003	591-20701-200	THROTTLE VALVE	1
5-004	623-21700-200	ADJUST SPRING	1
5-005	615-20701-200	AIR SCREW	1
5-006	491-20701-801	THROTTLE LEVER COMP.	1
5-007	494-20702-900	CHOKE LEVER ASS'Y	1
5-008	622-20701-200	ADJUST SCREW	1
5-009	623-20701-200	ADJUST SPRING	1
5-010	555-20701-200	THROTTLE SHAFT GUIDE SCREW	1
5-011	990-06040-041	F.H. SCREW 4X4	1
5-012	525-20701-200	FIBER GASKET	1
5-013	600-20703-200	PILOT JET	1
5-014	631-20702-200	STOP RING	2
5-015	632-20702-200	WASHER PLATE	1
5-016	496-20701-200	CHOKE SPRING	1
5-017	567-20701-200	STEEL BALL	1
5-018	493-20701-200	CHOKE PLATE	1
5-021	633-20702-201	TIGHTEN SCREW	1
5-022	498-20701-900	MAIN NOZZLE ASS'Y	1
5-023	552-22501-200	O-RING	1
5-024	599-20701-970	MAIN JET ASS'Y	1
5-025	551-20702-200	O-RING A	1
5-026	603-20201-800	NEEDLE VALVE COMP.	1
5-027	602-20701-200	VALVE SEAT	1
5-028	601-20701-200	VALVE SEAT GASKET	1
5-029	628-20701-200	FLOAT ARM	1
5-030	605-20701-200	FLOAT ARM PIN	1
5-031	604-20701-200	FLOAT	1
5-032	607-20701-200	FLOAT CHAMBER GASKET	1
5-033	606-20701-200	FLOAT CHAMBER	1
5-034	627-20701-200	DRAIN PLUG	1
5-035	570-20426-200	FIBER GASKET	1
5-036	994-34040-160	SCREW 4X16/S	4
5-037	502-20702-200	FILTER	1
5-038	549-20702-200	WASHER	1



GOVERNOR MECHANISM

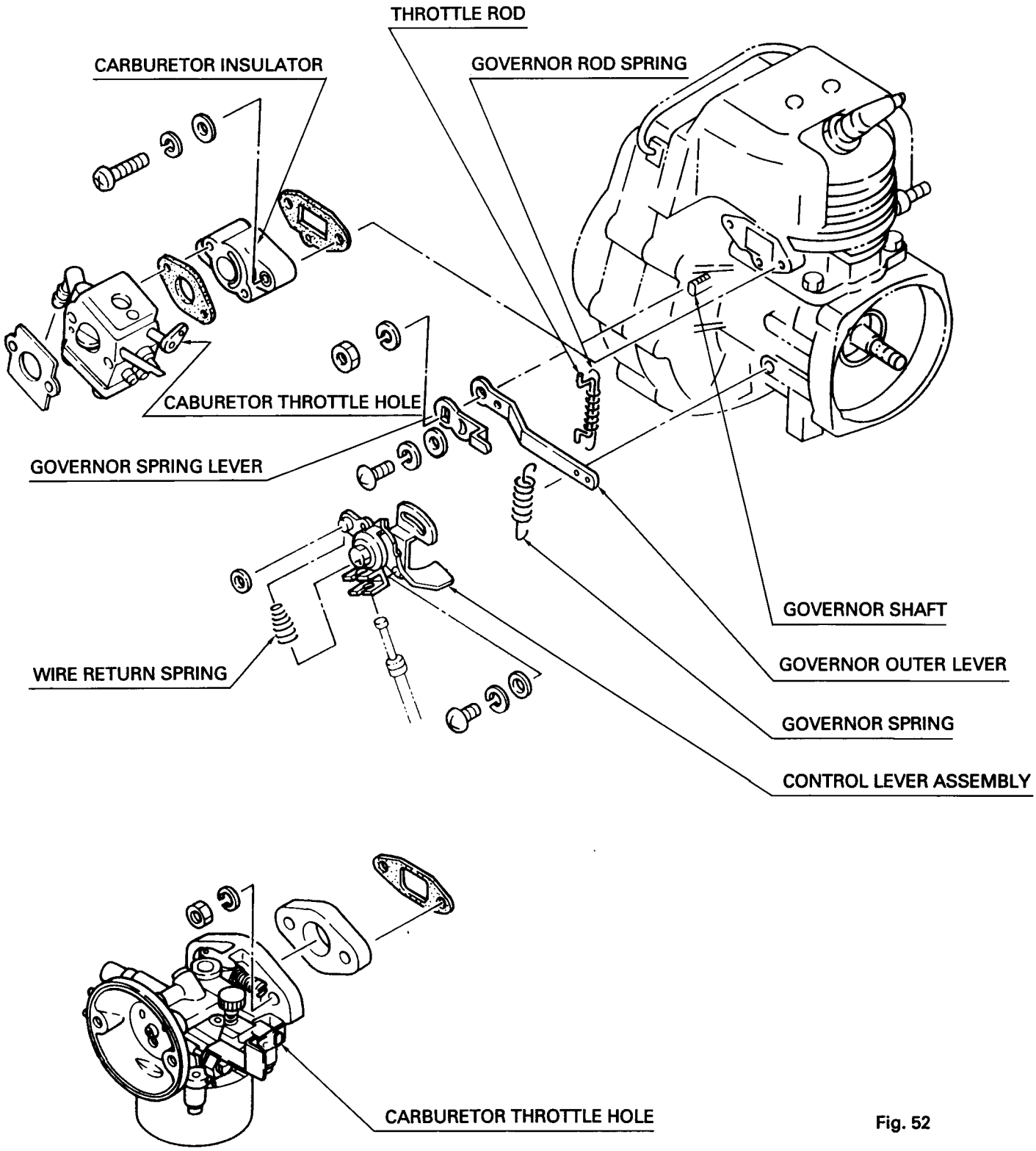


Fig. 52

9. GOVERNOR MECHANISM ASSEMBLY AND ADJUSTMENT

1) Governor outer lever
   A. Install throttle rod in larger hole.
   B. Install governor rod spring in small hole.
   C. Both rod and spring go in same hole in throttle lever on the carburetor. Fig. 52

2) Installing carburetor
   A. Install the throttle rod and the governor rod spring in the hole in the throttle lever.
   B. When installing carburetor insulator, be sure the vacuum hole is lined up with the hole in the cylinder (TLE-550).
   C. Bolt the insulator to the cylinder then bolt the carburetor to the insulator (TLE-550).
   D. Hook the throttle wire to the control lever assembly, not forgetting the return spring (tapered end up).

3) Adjustment of governor
   A. To adjust governor, loosen screw which holds control lever assembly to crankcase and move assembly left or right (maximum speed is 6500rpm). Fig. 53

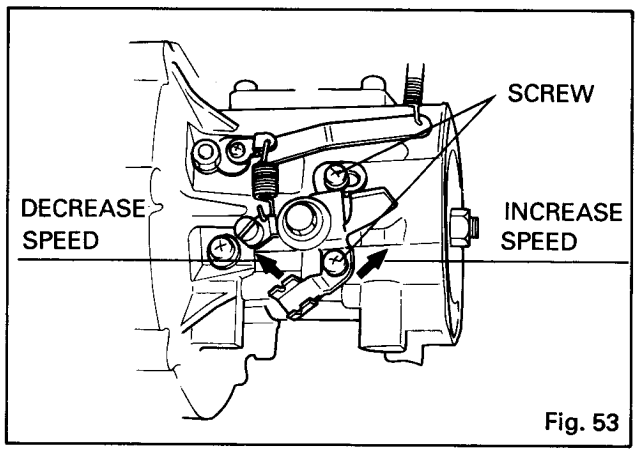


Fig. 53

   B. To adjust maximum speed. Move control lever assembly to left, to obtain higher speed and to right to obtain lower speed. Fig. 53. If this adjustment is not enough, unscrew the screw which secures governor outer lever and governor spring lever, then move governor outer lever up to decrease speed or down to increase speed. Fig. 54

NOTE: Always adjust throttle wire end play before governor adjustment.

CAUTION: Do not adjust to run more than 6500rpm.

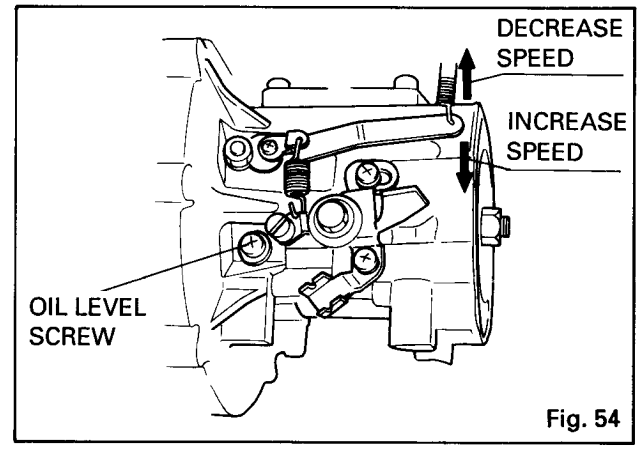


Fig. 54

4) Governor hunting (Varying R.P.M.)
   A. Hunting occurs with insufficient warm up of engine.
   B. When the governor spring, governor rod or governor rod spring moves improperly, hunting may occur. Check and clean.
   C. If governor rod spring becomes stretched, hunting may occur. Handle with care.
   D. When the main jet or pilot jet of the carburetor is plugged with dirt or old fuel, hunting may occur. Check and clean (TLE-500).
   E. If the gasoline and oil mix ratio is not correct, hunting may occur. Ratio should be from 25:1 to 50:1.
   F. When the slow jet is plugged with dirt or old fuel, hunting may occur under light or no load. Check and clean (TLE-500).
      NOTE: Rich oil mixture or old fuel may clog jets.
   G. When fuel tank or petcock is clogged with dirt or old fuel, hunting may occur. Check and clean.
   H. When there is insufficient oil in the governor, the weights will not operate properly, resulting in hunting. Check and refill with gear oil.
   I. If the high speed screw on the carburetor is improperly adjusted, hunting may occur. Adjust properly (TLE-550).

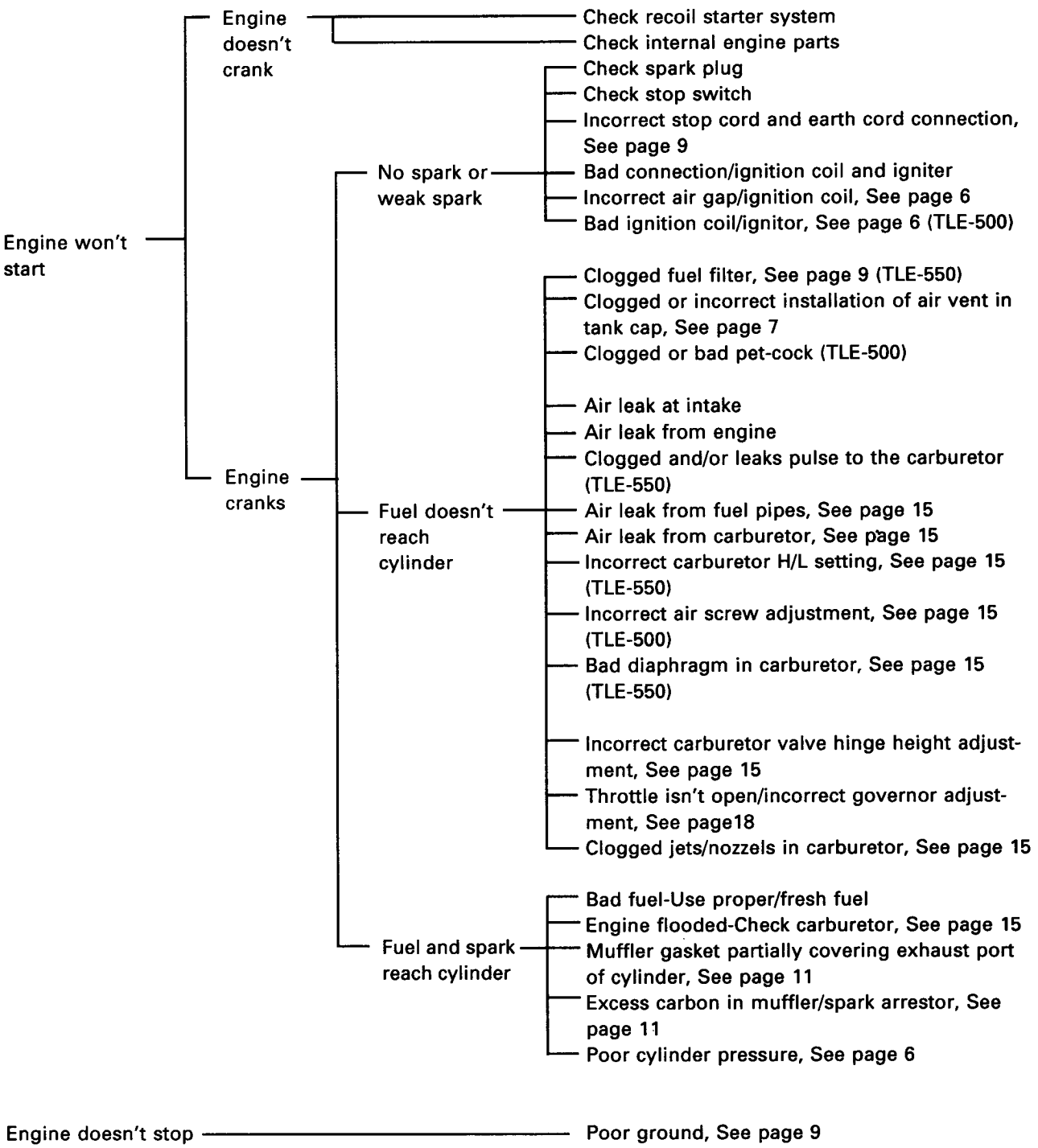
10. TLE-500 TECHNICAL SPECIFICATIONS

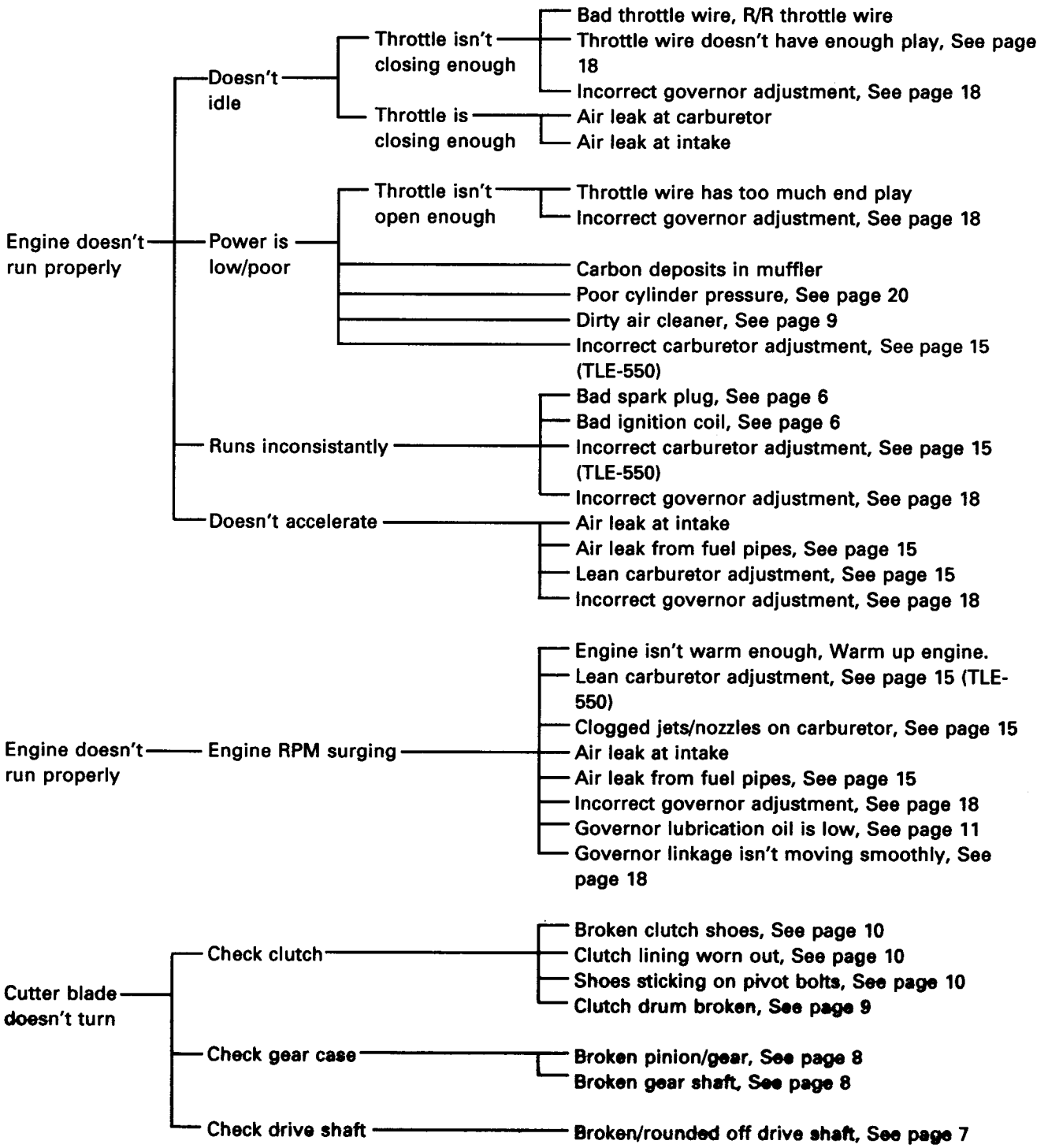
ENGINE	Forced air cooled 2 cycle gasoline engine
BORE × STROKE	41mm x 38mm (1.61in x 1.50in)
DISPLACEMENT	50.1cc (3.06cu.in)
MAXIMUM HORSEPOWER	2.5hp at 5500rpm
MAXIMUM TORQUE	0.29kg-m (25.2in.lbs) at 4000rpm.
COMPRESSION RATIO	5.7:1
STD. COMPRESSION	7.0 ~ 9.5kg/cm^2 (100 ~ 135psi)
IDLE SPEED	2500 ± 200rpm
CLUTCH-IN SPEED	3500 ± 200rpm
MAXIMUM GOVERNED SPEED	6500rpm
IGNITION SYSTEM	Transistorized solid state coil and rotor air gap 0.35 ± 0.05mm (0.012 ~ 0.016in)
CARBURETION	Float carburetor with butterfly valve • Main Jet #70 • Float hinge setting 4.0mm (0.157in) • Air screw adjustment 2 1/4 turns
SPARK PLUG	BM7A (NGK) or CJ-6 (Champion) • Air gap 0.6mm (0.024in)
FUEL TANK CAPACITY	1200cc (73fl-02)
BLADE ARBOR DIAMETER	1/2in
MAXIMUM BLADE SIZE	10in
MAXIMUM CUTTING DEPTH	3 1/4in
CLUTCH	Three shoe 78mm (3.1in) diameter centrifugal
GEAR REDUCTION	Helical bevel gear. Reduction ratio 1.94:1 (31T:16T)*
DRIVE SHAFT	10mm (0.394in) diameter tempered carbon steel
FUEL REQUIRED	50 parts regular gasoline to 1 part TANAKA 2 cycle oil or 25 ~ 50 parts regular gasoline to 1 part quality 2 cycle oil
GOVERNOR LUBRICATION	SAE #30 ~ #90 oil, 15cc (0.5fl–oz)
GEAR CASE LUBRICATION	Lithium base grease 25g (0.9fl-oz)
DRY WEIGHT	25.7kg (56.7lbs)
DIMENTIONS	1230 x 470 x 980mm
(LxWxH)	(48.4 x 18.5 x 38.6in * May have 1.92 : 1 (25T : 13T)

TLE-550 TECHNICAL SPECIFICATIONS

ENGINE	Forced air cooled 2 cycle gasoline engine
BORE × STROKE	41mm x 38mm (1.61in x 1.50in)
DISPLACEMENT	50.1cc (3.06cu.in)
MAXIMUM HORSEPOWER	2.5hp at 5500rpm
MAXIMUM TORQUE	0.29kg-m (25.2in.lbs) at 4000rpm.
COMPRESSION RATIO	5.7: 1
STD. COMPRESSION	7.0 ~ 9.5kg/cm^2 (100 ~ 135psi)
IDLE SPEED	2500 ± 200rpm
CLUTCH-IN SPEED	3500 ± 200rpm
MAXIMUM GOVERNED SPEED	6500rpm
IGNITION SYSTEM	Transistorized solid state coil and rotor air gap 0.35 ± 0.05mm (0.012 ~ 0.016in)
CARBURETION	Walbro diaphragm HDA58 • STD setting H. 1 1/4 ± 1/4 L. 1 1/4 ± 1/4 • Control lever (Hinge) height –0.10 ~ +0.25mm (–0.04 ~ + 0.01in) • Inlet needle pressure limit 0.4 ~ 0.5kg/cm2. (5.7 ~ 7.1psi)
SPARK PLUG	BM7A (NGK) or CJ-6 (champion) • Air gap 0.6mm (0.024in)
FUEL TANK CAPACITY	2300cc. (77.8fl-02)
BLADE ARBOR DIAMETER	1/2in
MAXIMUM BLADE SIZE	10in
MAXIMUM CUTTING DEPTH	3 1/4in
CLUTCH	Three shoe 78mm (3.1in) diameter centrifugal
GEAR REDUCTION	Helical bevel gear, Reduction ratio 1.94:1 (31T:16T) or 1.92:1 (25T:13T)
DRIVE SHAFT	10mm (0.0394in) diameter tempered carbon steel
FUEL REQUIRED	50 parts regular gasoline to 1 part TANAKA 2 cycle oil or 25 ~ 50 parts regular gasoline to 1 part quality 2 cycle oil
GOVERNOR LUBRICATION	SAE #30 ~ #90 oil, 15cc (0.5fl-oz) capacity
GEAR CASE LUBRICATION	Lithium base grease 25g (0.9fl-oz)
DRY WEIGHT	24.5kg (54.0lbs)
DIMENTIONS (LxWxH)	1400 x 500 x 950mm (55.1 x 19.7 x 37.4in)

11. TROUBLE SHOOTING


Engine won't start
Engine doesn't crank
Check recoil starter system
Check internal engine parts
Engine cranks
No spark or weak spark
Check spark plug
Check stop switch
Incorrect stop cord and earth cord connection, See page 9
Bad connection/ignition coil and igniter
Incorrect air gap/ignition coil, See page 6
Bad ignition coil/ignitor, See page 6 (TLE-500)
Fuel doesn't reach cylinder
Clogged fuel filter, See page 9 (TLE-550)
Clogged or incorrect installation of air vent in tank cap, See page 7
Clogged or bad pet-cock (TLE-500)
Air leak at intake
Air leak from engine
Clogged and/or leaks pulse to the carburetor (TLE-550)
Air leak from fuel pipes, See page 15
Air leak from carburetor, See page 15
Incorrect carburetor H/L setting, See page 15 (TLE-550)
Incorrect air screw adjustment, See page 15 (TLE-500)
Bad diaphragm in carburetor, See page 15 (TLE-550)
Incorrect carburetor valve hinge height adjustment, See page 15
Throttle isn't open/incorrect governor adjustment, See page18
Clogged jets/nozzels in carburetor, See page 15
Fuel and spark reach cylinder
Bad fuel-Use proper/fresh fuel
Engine flooded-Check carburetor, See page 15
Muffler gasket partially covering exhaust port of cylinder, See page 11
Excess carbon in muffler/spark arrestor, See page 11
Poor cylinder pressure, See page 6
Engine doesn't stop
Poor ground, See page 9


Engine doesn't run properly
Doesn't idle
Throttle isn't closing enough
Bad throttle wire, R/R throttle wire
Throttle wire doesn't have enough play, See page 18
Incorrect governor adjustment, See page 18
Throttle is closing enough
Air leak at carburetor
Air leak at intake
Power is low/poor
Throttle isn't open enough
Throttle wire has too much end play
Incorrect governor adjustment, See page 18
Carbon deposits in muffler
Poor cylinder pressure, See page 20
Dirty air cleaner, See page 9
Incorrect carburetor adjustment, See page 15 (TLE-550)
Runs inconsistantly
Bad spark plug, See page 6
Bad ignition coil, See page 6
Incorrect carburetor adjustment, See page 15 (TLE-550)
Incorrect governor adjustment, See page 18
Doesn't accelerate
Air leak at intake
Air leak from fuel pipes, See page 15
Lean carburetor adjustment, See page 15
Incorrect governor adjustment, See page 18
Engine doesn't run properly
Engine RPM surging
Engine isn't warm enough, Warm up engine.
Lean carburetor adjustment, See page 15 (TLE-550)
Clogged jets/nozzles on carburetor, See page 15
Air leak at intake
Air leak from fuel pipes, See page 15
Incorrect governor adjustment, See page 18
Governor lubrication oil is low, See page 11
Governor linkage isn't moving smoothly, See page 18
Cutter blade doesn't turn
Check clutch
Broken clutch shoes, See page 10
Clutch lining worn out, See page 10
Shoes sticking on pivot bolts, See page 10
Clutch drum broken, See page 9
Check gear case
Broken pinion/gear, See page 8
Broken gear shaft, See page 8
Check drive shaft
Broken/rounded off drive shaft, See page 7